

REMARKS

Rejection under 35 U.S.C. 103

On page 2 of the Office Action, in paragraph 2, claims 1, 4-5, and 10-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kolla et al. (Chromatographia, 23, 7, pp. 465-472) in light of Gordon et al. (US 4,507,411).

In response, Applicant submits initially that Gordon relates to a composition formed by bringing together:

- (a) a first polymer containing carboxylic acid, anhydride or acid chloride groups,
- (b) an amine or alcohol or a derivative thereof which is a tertiary amine, a ketimine, an acetal or an oxazolidine, and
- (c) a second polymer capable of cross-linking with the first polymer in the presence of the amine or alcohol.

Specific examples of (a) include maleinised polybutadiene, which is maleic anhydride grafted polybutadiene, wherein polybutadiene constitutes a stem polymer.

Regarding examples of (b), the term “an alcohol or derivative thereof which is a tertiary amine” is not clear, but Applicant supposes that “alcohol or derivative thereof which is a tertiary amine” means an alcohol having a tertiary amino group.

Specific examples of (c) include an epoxy resin.

The Examiner contends that “Gordon teaches that it is known in the art to cross-link maleinised polybutadiene in alcohol (claimed “solvent”) (1:10-13)”. However, to be exact, the disclosure in Gordon is as follows:

“It is well known that polymers containing carboxylic acid, anhydride or acid chloride groups (e.g. maleinised polybutadiene) can be cross-linked by reacting them with amines or alcohols.”
(emphasis added)

The Examiner considers that “alcohol” disclosed in the above-mentioned context is a solvent of the present invention, which is incapable of dissolving the polymer coated.

However, Applicant submits that the above description means that the alcohol is used as cross-linking agent, not as a solvent.

In col. 1, lines 27 to 28 in Gordon, it is clearly described that “It is important, therefore, to select an amine or alcohol cross-linking agent ...”.

Further, in col. 7, line 32, “tris(dimethylaminomethyl)phenol as the cross-linking agent ...” is described.

In Gordon, a compound of component (b) must be a bi-functional compound, having both OH and amino groups, for a purpose of cross-linking carboxyl groups of component (a) or cross-linking a carboxyl group of component (a) and an epoxy group of component (c). Therefore, in the example of Gordon, amino alcohol is used as component (b). The amount of the alcohol used is about 2% by weight of the total. Thus, it is clear that the alcohol is not used as a solvent, but rather is used as a cross-linking agent.

In Example 2, Gordon discloses a case in which ‘toluene’ is used as a solvent of maleinised polybutadiene (50% solution in toluene). Toluene disclosed in Gordon is a solvent that dissolves maleinised polybutadiene.

On the other hand, in Examples 1 and 2 of the present invention, toluene is used as a solvent incapable of dissolving the polymer coated.

Further, Applicant notes that poly(butadiene-maleic acid anhydride) (PBDMAN) of the present invention is a copolymer of butadiene and maleic acid anhydride, while maleinised polybutadiene disclosed in Gordon is a grafted polymer, in which maleic acid anhydride is grafted to polybutadiene. Therefore, the structures of both polymers are different.

Consequently, Applicant submits that it would not have been obvious to one of ordinary skill in the art at the time the invention was made to have cross-linked the PBDMA of Kolla in a solvent as taught by Gordon with a predictable expectation of success. Accordingly, withdrawal of this rejection is respectfully requested.

Allowable Subject Matter

On page 3 of the Office Action, in paragraph 3, claims 2-3 and 6-15 (with respect to their dependence from claims 2-3) are objected to as being dependent on a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


Applicant thanks the Examiner for indicating that claims 2-3 and 6-15 (with respect to their dependence from claims 2-3) would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. In view of the above remarks responding to the obviousness rejection, Applicant submits that the base claim should not be rejected, and thus claims 2-3 and 6-15 (with respect to their dependence from claims 2-3) should not be objected to as being dependent on a rejected base claim. Accordingly, Applicant submits that the objection to claims 2-3 and 6-15 (with respect to their dependence from claims 2-3) has been overcome, and withdrawal of this objection and allowance of the present claims are respectfully requested.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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